In the Claims:

Please amend claims 1, 3 and 8 as follows:

1. (Currently Amended) A method for obtaining in real time torques to be applied to joints of a leg of a biped walking system, the method being executed by a processor and comprising the steps of:

determining which leg or legs are in contact with the ground by a leg-motion determining module that uses data from an associated sensor;

obtaining an attitude of the leg by a leg-attitude computing module that uses data from associated sensors;

obtaining a position of the center of gravity of the whole body by a body center of gravity location computing module that uses data from associated sensors;

obtaining the vertical component of acceleration of the center of gravity of the whole body including the leg by a body center of gravity acceleration computing module that uses data from associated sensors;

obtaining the vertical component of an actual ground reaction force acting on the leg by a ground reaction force estimating module, based on which leg or legs are in contact with the ground, the attitude of the leg, the position of the center of gravity of the whole body and the vertical component of acceleration of the center of gravity of the whole body including the leg, the ground reaction force

estimating module being connected to the leg-motion determining module, the leg-attitude computing module, the body center of gravity location computing module and the body center of gravity acceleration computing module;

obtaining an actual point of application of the ground reaction force by a module for estimating a point of application of a ground reaction force, based on ~~a~~ the position of the center of gravity of the whole body, positions of ankle joints and positions of joints at front ends of feet under normal condition and based on positions of the joints at front ends of feet when going up or down stairs or going uphill or downhill, wherein it is determined based on positions of the ankle joints while the both legs are in contact with the ground whether the system is under normal condition or going up or down stairs or going uphill or downhill, the module for estimating a point of application of ground reaction force being connected to the leg-attitude computing module and the body center of gravity location computing module;

obtaining moments acting around the joints of the leg, by a joint moment estimating module, using the vertical component of the ground reaction force acting on the leg at the point of application of the ground reaction force, the vertical components of forces acting on the joints of the leg and a term of the acceleration of gravity and without using the horizontal components of the forces

acting on the joints of the leg and a term of acceleration except the term of the acceleration of gravity; and

~~applying~~ obtaining the torques to be applied to the joints of the leg, by a gravity compensation torque computing module, based on the moments acting around the joints of the leg.

2. (Previously Presented) A method according to claim 1, wherein in the step of determining which leg or legs are in contact with the ground, the determination is made based on a value of the vertical component of acceleration measured on the body.

3. (Currently Amended) A method according to claim 1, ~~wherein in the step of determining which leg or legs are in contact with the ground, the determination is made using a sensor~~ wherein a foot switch is included in the leg-motion determining module.

4. (Previously Presented) A method according to claim 1 wherein in the step of obtaining an actual point of application of the ground reaction force, the point is obtained based additionally on a location of the center of gravity of the body.

5. (Original) A method according to claim 4, wherein in the step of obtaining a point of application of the ground reaction force, the point is obtained further using information from a sensor.

6. (Previously Presented) A method according to claim 1 wherein the vertical component of acceleration of the center of gravity of the whole body, is obtained based on locations of the centers of gravity of portions of the body, obtained based on attitudes of the leg and other portions of the body, and the vertical component of acceleration measured at the body.

7. (Previously Presented) A method according to claim 1 wherein in the step of obtaining moments acting around the joints of the leg, at first the vertical component of a force acting on and a moment acting around the knee joint of the shin, are obtained using the vertical component of the ground reaction force acting on the shin at the point of application of the ground reaction force and a term of acceleration of gravity and without using the horizontal component of the ground reaction force and a term of acceleration except the term of the acceleration of gravity and then the vertical component of a force acting on and a moment acting around the hip joint of the thigh, are obtained using the vertical component of a force acting on and a moment acting around the knee joint of the thigh and a term of the acceleration of gravity without using the horizontal component of the horizontal component of the force acting on the knee joint and a term of acceleration except the term of the acceleration of gravity.

8. (Currently Amended) A method for obtaining in real time moments acting around joints of a leg of a biped walking system, the method being executed by a processor and comprising the steps of:

determining which leg or legs are in contact with the ground by a leg-motion determining module that uses data from an associated sensor;

obtaining an attitude of the leg by a leg-attitude computing module that uses data from associated sensors;

obtaining a position of the center of gravity of the whole body by a body center of gravity location computing module that uses data from associated sensors;

obtaining the vertical component of acceleration of the center of gravity of the whole body including the leg by a body center of gravity acceleration computing module that uses data from associated sensors;

obtaining the vertical component of an actual ground reaction force acting on the leg by a ground reaction force estimating module, based on which leg or legs are in contact with the ground, the attitude of the leg, the position of the center of gravity of the whole body and the vertical component of acceleration of the center of gravity of the whole body including the leg and the attitude of the leg, the ground reaction force estimating module being connected to the leg-motion determining module, the leg-attitude computing module, the body center of gravity

location computing module and the body center of gravity acceleration computing module;

obtaining ~~a~~ an actual point of application of the ground reaction force by a module for estimating a point of application of ground reaction force, based on ~~a~~ the position of the center of gravity of the whole body, positions of ankle joints and positions of joints at front ends of feet under normal condition and based on positions of the joints at front ends of feet when going up or down stairs or going uphill or downhill, wherein it is determined based on positions of the ankle joints while the both legs are in contact with the ground whether the system is under normal condition or going up or down stairs or going uphill or downhill, the module for estimating a point of application of ground reaction force being connected to the leg-attitude computing module and the body center of gravity location computing module; and

~~applying torques to joints of the legs based upon~~ obtaining ~~the~~ moments acting around the joints of the leg, by a joint moment estimating module, using the vertical component of the ground reaction force acting on the leg at the point of application of the ground reaction force, the vertical components of forces acting on the joints of the leg and a term of the acceleration of gravity and without using the horizontal components of the forces acting on the joints of the leg and a term of acceleration except the term of the acceleration of gravity.

9. (Withdrawn) A processor for obtaining torques to be applied to joints of a leg of a biped walking system, the processor being operable in association with angular sensors of the joints and at least one accelerometer set on the body of the biped walking system, wherein the processor is configured to perform the steps of:

determining which leg or legs are in contact with the ground, using information from the at least one accelerometer;

obtaining an attitude of the leg, using information from the angular sensors;

obtaining a location of the center of gravity of the whole body including the leg;

obtaining the vertical component of acceleration of the center of gravity of the whole body including the leg, using information from the at least one accelerometer;

obtaining the vertical component of a ground reaction force acting on the leg, based on which leg or legs are in contact with the ground, the attitude of the leg, the location of the center of gravity of the whole body and the vertical component of acceleration of the center of gravity of the whole body;

obtaining a point of application of the ground reaction force, using the attitude of the leg and the location of the center of gravity of the whole body;

obtaining moments acting around the joints of the leg, using the vertical component of the ground reaction force acting on the leg at the point of application

of the ground reaction force, the vertical components of forces acting on the joints of the leg and a term of the acceleration of gravity and without using the horizontal components of the forces acting on the joints of the leg and a term of acceleration except the term of the acceleration of gravity; and

obtaining the torques to be applied to the joints of the leg, based on the moments acting around the joints of the leg.

10. (Withdrawn) A processor for obtaining torques to be applied to joints of a leg of a biped walking system, the processor being operable in association with angular sensors on the joints, at least one accelerometer set on the body of the biped walking system and at least one sensor set on the leg, wherein the processor is configured to perform the steps of:

determining which leg or legs are in contact with the ground, using information from the at least one sensor set on the leg;

obtaining an attitude of the leg, using information from the angular sensors;

obtaining a location of the center of gravity of the whole body including the leg;

obtaining the vertical component of acceleration of the center of gravity of the whole body including the leg, using information from the at least one accelerometer;

obtaining the vertical component of a ground reaction force acting on the leg, based on which leg or legs are in contact with the ground, the attitude of the leg, the location of the center of gravity of the whole body and the vertical component of acceleration of the center of gravity of the whole body;

obtaining a point of application of the ground reaction force, using the attitude of the leg and the location of the center of gravity of the whole body;

obtaining moments acting around the joints of the leg, using the vertical component of the ground reaction force acting on the leg at the point of application of the ground reaction force, the vertical components of forces acting on the joints of the leg and a term of the acceleration of gravity and without using the horizontal components of the forces acting on the joints of the leg and a term of acceleration except the term of the acceleration of gravity; and

obtaining the torques to be applied to the joints of the leg, based on the moments acting around the joints of the leg.

11. (Withdrawn) A processor for obtaining moments acting around joints of a leg of a biped walking system, the processor being operable in association with angular sensors on the joints, at least one accelerometer set on the body of the biped walking system, wherein the processor is configured to perform the steps of:

determining which leg or legs are in contact with the ground, using information from the at least one accelerometer;

obtaining an attitude of the leg, using information from the angular sensors;

obtaining a location of the center of gravity of the whole body including the leg;

obtaining the vertical component of acceleration of the center of gravity of the whole body including the leg, using information from the at least one accelerometer;

obtaining the vertical component of a ground reaction force acting on the leg, based on which leg or legs are in contact with the ground, the attitude of the leg, the location of the center of gravity of the whole body and the vertical component of acceleration of the center of gravity of the whole body;

obtaining a point of application of the ground reaction force, using the attitude of the leg and the location of the center of gravity of the whole body; and

obtaining the moments acting around the joints of the leg, using the vertical component of the ground reaction force acting on the leg at the point of application of the ground reaction force, the vertical components of forces acting on the joints of the leg and a term of the acceleration of gravity and without using the horizontal components of the forces acting on the joints of the leg and a term of acceleration except the term of the acceleration of gravity.

12. (Withdrawn) A processor for obtaining moments acting around joints of a leg of a biped walking system, the processor being operable in association with

angular sensors on the joints, at least one accelerometer set on the body of the biped walking system and at least one sensor set on the leg, wherein the processor is configured to perform the steps of:

determining which leg or legs are in contact with the ground, using information from the at least one sensor set on the leg;

obtaining an attitude of the leg, using information from the angular sensors;

obtaining a location of the center of gravity of the whole body including the leg;

obtaining the vertical component of acceleration of the center of gravity of the whole body including the leg, using information from the at least one accelerometer;

obtaining the vertical component of a ground reaction force acting on the leg, based on which leg or legs are in contact with the ground, the attitude of the leg, the location of the center of gravity of the whole body and the vertical component of acceleration of the center of gravity of the whole body;

obtaining a point of application of the ground reaction force, using the attitude of the leg and the location of the center of gravity of the whole body; and

obtaining the moments acting around the joints of the leg, using the vertical component of the ground reaction force acting on the leg at the point of application of the ground reaction force, the vertical components of forces acting on the joints

of the leg and a term of the acceleration of gravity and without using the horizontal components of the forces acting on the joints of the leg and a term of acceleration except the term of the acceleration of gravity.